

Oracle® Enterprise Manager Ops Center

Concepts Guide

12c Release 1 (12.1.1.0.0)

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Primary Authors: Barbara Higgins, Laura Hartman, Richa Agarwala

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Preface

The *Oracle® Enterprise Manager Ops Center Concepts Guide* provides an overview of the Oracle Enterprise Manager Ops Center software.

Audience

This document is intended for all users of Oracle Enterprise Manager Ops Center 12c Release 1 software.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at

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Related Documents

For more information, see the other documents in the Oracle Enterprise Manager Ops Center 12c Release 1 documentation set, located at this site:

<http://www.oracle.com/pls/topic/lookup?ctx=oc121>

- *Oracle Enterprise Manager Ops Center Release Notes*
- *Oracle Enterprise Manager Ops Center Installation Guide for Linux Operating Systems*
- *Oracle Enterprise Manager Ops Center Installation Guide for Oracle Solaris Operating Systems*
- *Oracle Enterprise Manager Ops Center Administration Guide*
- *Oracle Enterprise Manager Ops Center Feature Reference Guide*
- *Oracle Enterprise Manager Ops Center How To Library*

Conventions

The following text conventions are used in this document:

Convention	Meaning
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, code in examples, text that appears on the screen, or text that you enter.

Introduction

Many organizations are moving toward complex data centers that incorporate virtualization technology and disparate operating system, hardware, and storage device assets. System administrators are looking for effective methods for managing data center complexities, solving the major challenges that they face, reducing costs, and saving time. System management challenges include streamlining operations to control operation and maintenance costs, deploying new assets efficiently, responding quickly to changes in resources and reducing downtime. Oracle Enterprise Manager Cloud Control and Oracle Enterprise Manager Ops Center address these challenges.

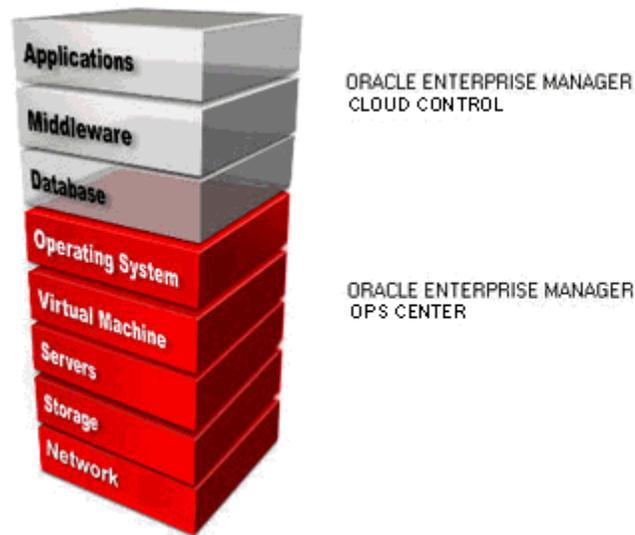
This document provides an overview of the Oracle Enterprise Manager Ops Center software and explains its design. The following topics are covered:

- [Key Capabilities and Features](#)
- [Exploring the User Interface](#)
- [Resources](#)

Oracle Enterprise Manager

Oracle Enterprise Manager Cloud Control and Oracle Enterprise Manager Ops Center are complementary technologies that provide an enterprise-level data center management solution for all levels, from applications to storage disks. Each product monitors managed assets, or targets, but in different sections of the data center asset stack. Oracle Enterprise Manager Cloud Control manages applications, middleware, and databases, while Oracle Enterprise Manager Ops Center manages operating systems, virtual machines, servers, storage resources, and network resources. Together, they deliver a complete solution for data center infrastructure management.

Figure 1–1 Managed Asset Stack

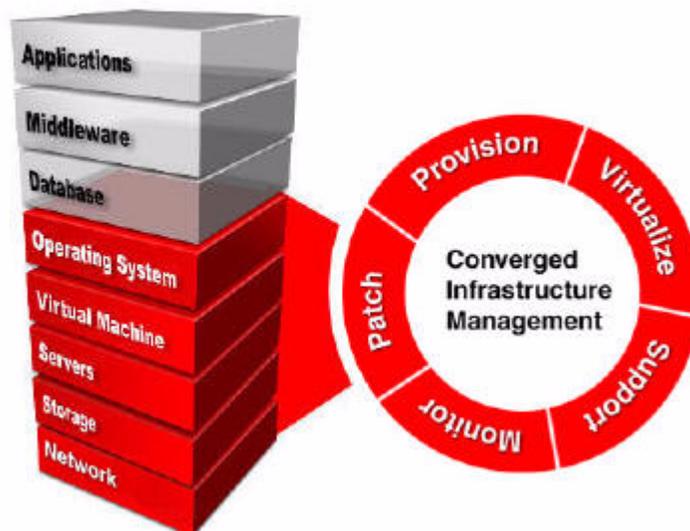


You can install and configure the applications to work together, or you can use each application individually. This document focuses solely on the features and functionality of the Oracle Enterprise Manager Ops Center software.

The Oracle Enterprise Manager Ops Center Solution

Oracle Enterprise Manager Ops Center is Oracle's comprehensive system management solution for managing the physical and virtual operating systems, servers, and storage devices in your data center. You use the discovery and management features to add your data center's assets to the set of managed assets in Oracle Enterprise Manager Ops Center. You can provision, update (patch), monitor and manage the physical and virtual managed assets in one or more of your data centers from a single console, regardless of where the asset is located.

Figure 1–2 Oracle Enterprise Manager Ops Center Solution



Oracle Enterprise Manager Ops Center is included in the Oracle Premier Support for Systems, Oracle Premier Support for Operating Systems, and Oracle Premier and Basic Support for Oracle Linux, Oracle VM Server for SPARC, and Oracle VM Servers for x86. By owning one of these Oracle Support contracts, you can use and get support for Oracle Enterprise Manager Ops Center.

Key Features

The Oracle Enterprise Manager Ops Center software provides features tailored for administrating the data center infrastructure, including the following:

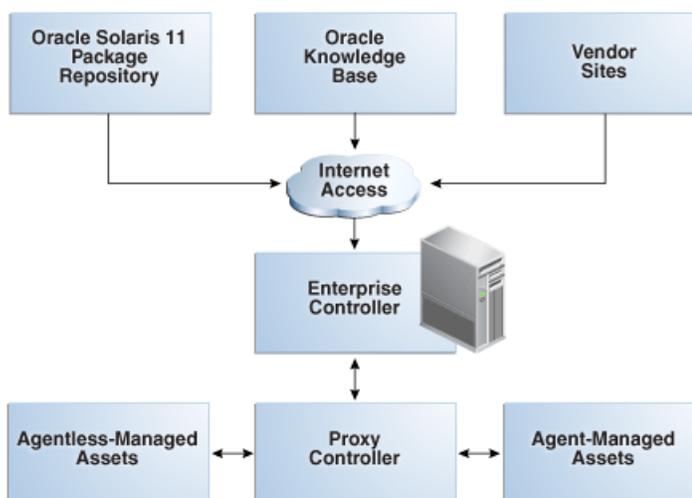
- **Dashboards** – View a summary of a group of assets or an individual asset, including a graphical representations of the status and membership.
- **Incident management** – Monitor the assets according to rules and thresholds that you set. If an incident occurs, the incident knowledge base is activated to display known issues and the assigned administrators in the Message Center. You can add annotations to record actions and status or run scripts to resolve a known incident and solution.
- **Integration with Oracle Enterprise Manager Cloud Control** – View configuration, health, and performance information and incidents of managed assets using either software product. Changes in one product are reported in the other product.
- **Profiles for assets** – Create software profiles and operational profiles that contain your custom executable scripts and include them in a plan.
- **Operational plans** – Deploy a single script as an operational profile. An operational plan can run as an individual plan, or as a step within a deployment plan. You can run the scripts independent of local software, and can use them to perform specific tasks in your environment, such as configuration options, or to assist in incident management.

- **Deployment plans** – Combine one or more profiles and scripts to create a multi-task plan that provisions operating systems or firmware efficiently and consistently.
- **Plan management** – Provides default templates, profiles, and plans needed to create and deploy plans. Plan management also includes a Incidents Knowledge Base, where you can create a database of known issues. You can use operational profiles and annotations to associate recommended or automated actions to respond to known issues.
- **Hardware management** – Update system component firmware and track hardware configuration changes over time. Increase energy efficiency by tracking energy utilization for ILOM x64, ILOM CMT, and M-Series servers and chassis and manage the power budget of ILOM 3.0 systems.
- **Virtualization management** – Manage virtual assets such as Oracle Solaris Zones, Oracle VM Servers for SPARC, Oracle VM Servers for x86, and their guests. The network and storage resources for virtual assets are provided by their membership in server pools.
- **Reports** – You can create reports for assets and activities and export the reports as files in PDF format or as comma-separated values.

Architecture of the Solution

Oracle Enterprise Manager Ops Center is designed to provide increased scalability, high availability and optimized performance in large, distributed data centers. The architecture can be scaled as your organization grows. The Enterprise Controller, Proxy Controller, Agent Controller, and user interface are the major architectural components, along with the Knowledge Base, which is hosted by Oracle Corporation and accessed through the Internet. Because of this architecture, you can customize your deployment for the size and network topology of your organization by varying the placement of the Proxy Controllers and use of Agent Controllers.

In a basic deployment, information from the [Knowledge Base and Package Repository](#) is downloaded to the [Enterprise Controller](#), which stores the information along with basic management tools, such as the profiles and plans. At least one [Proxy Controller](#) distributes the Enterprise Controller's work. Secure network connections between all components transfer control commands and data. For operating systems, [Agent Controllers](#) provide update capabilities, management and monitoring, and control of virtualization environments. Agent Controllers are required for Linux and Oracle Solaris update jobs, system catalogs, update reports, and operating system provisioning. Oracle Solaris 9 and 10 boot environment management also requires an agent-managed operating system. Agent Controllers are not required for updating Microsoft Windows systems.

Figure 1–3 Basic Deployment

Knowledge Base and Package Repository

The Knowledge Base and Oracle Solaris 11 Package Repository store metadata about Oracle Solaris and Linux operating system components. The metadata includes patch dependencies, standard patch compatibilities, withdrawn patches, and rules for download and deployment. The Knowledge Base keeps track of the URLs for the operating systems and retrieve the components from the appropriate vendor download site.

By default, Oracle Enterprise Manager Ops Center is configured to connect to Oracle Corporation sites for updated metadata for operating systems. However, you can configure the product software without a direct connection to these sites.

Enterprise Controller

The Enterprise Controller is the central server for Oracle Enterprise Manager Ops Center. All operations, or jobs, are initiated from the Enterprise Controller. It manages firmware and operating system images, plans, profiles, and policies. The Enterprise Controller relies on a database of asset data and site customizations. This database can be a local embedded database or a remote Oracle Enterprise Edition database that is accessible on the network to the Enterprise Controller. You can include the Enterprise Controller in an active-standby High Availability configuration to increase the availability of the Oracle Enterprise Manager Ops Center software.

The Enterprise Controller connects to the Internet to get access to contract information, to create service requests, and to download updates, Oracle Solaris images, and updates to the product software itself. When an update is requested, the Enterprise Controller retrieves the software from the Knowledge Base, package repository, or vendor. This is the default mode of operation called Connected mode.

If your site policy does not allow an Internet connection, you can operate the software in Disconnected mode. In this mode, you must load and maintain the Knowledge Base and package repository data and updates in the Enterprise Controller. For the Oracle Solaris and Oracle Linux operating systems, Oracle Enterprise Manager Ops Center provides a script that you can run on a system that is connected to the Internet to retrieve the contents of Oracle's KB and then you upload the baselines and updates to the Enterprise Controller. For all other supported operating systems, you can obtain

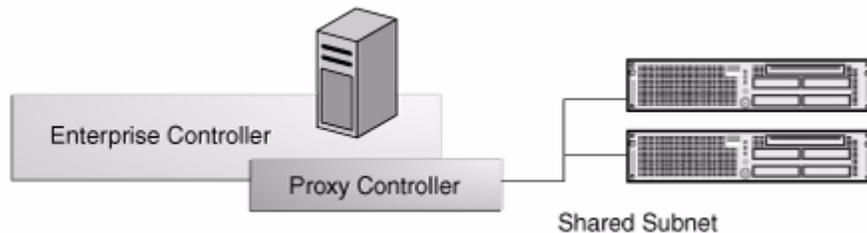
the updates in a media format, such as a CD or DVD, and upload the information as local content.

Proxy Controller

Proxy Controllers distribute the operation load and provides for fan-out capabilities to minimize network load. The Proxy Controller can also be used to provide a network presence behind a firewall or to provide access to a private network. A Proxy Controller links the managed assets to the Enterprise Controller and performs operations that must be located close to the managed assets, such as operating system provisioning. It performs management operations on agentless assets and reports the results to the Enterprise Controller. The actions required to manage, provision, and update assets are handled as a queue of jobs.

You must have at least one Proxy Controller. You can have a co-located Proxy Controller, that is, the Proxy Controller and Enterprise Controller software are installed on the same system. To enhance performance and scalability, the preferred method is to install the Proxy Controller on a separate machines.

Figure 1–4 Co-Located Proxy Controller

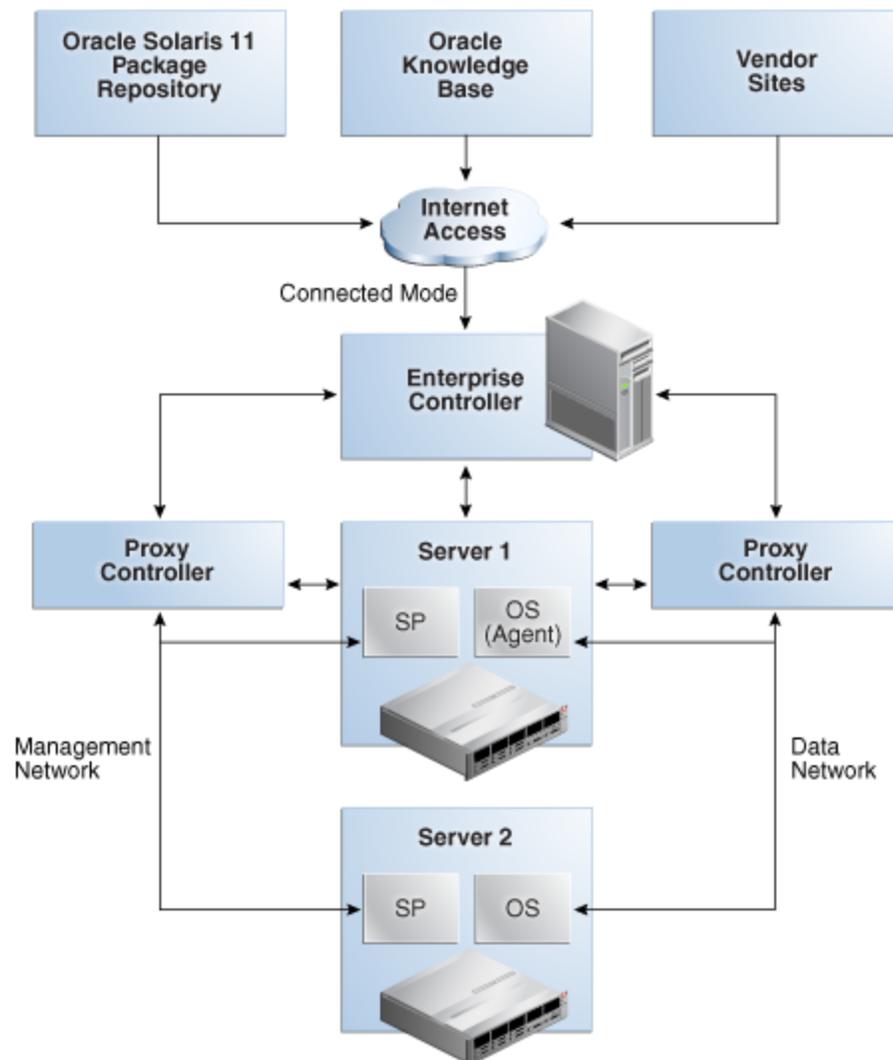


Although this architecture deploys a working Oracle Enterprise Manager Ops Center solution, most sites benefit from using multiple Proxy Controllers because of the following conditions:

- The data center has a large number of assets to manage.
- Some assets are in remote locations and you want to maintain performance.
- You anticipate creating a large number of jobs to run concurrently.
- Some assets are behind a firewall and need their own Proxy Controller.
- Some assets are on their own subnets and need a Proxy Controller on the same subnet for operating system provisioning.

In [Figure 1–5](#), one Proxy Controller is designated for the Management Network and another Proxy Controller is for the Data Network. The illustration shows how you can associate one Proxy Controller with the managed Service Processors and associate another Proxy Controller with the operating systems.

Figure 1-5 Complex Deployment



Agent Controllers

Physical and virtual Oracle Solaris and Linux operating systems require agent software to perform many functions, such as creating update reports, creating and using system catalogs, and managing Oracle Solaris 9 and 10 boot environments. Some monitoring and Analytics data also require an agent-managed operating system. However, you can use many of the monitoring and management features without installing an Agent Controller on the operating system.

The Agent Controller is lightweight Java software that identifies the asset and responds to a Proxy Controller. When an operating system is agent-managed, the agent receives the command from its Proxy Controller, performs the required action, and notifies the Proxy Controller of the results. When an operating system is agentlessly managed, the Proxy Controller uses SSH (Secure Shell protocol) to perform tasks and to monitor the operating system. You can change the method of managing an operating system asset.

Hardware management does not require the Agent Controller. Instead, a Proxy Controller runs commands on the hardware system and reports the results to the Enterprise Controller.

Key Capabilities and Features

Oracle Enterprise Manager Ops Center offers comprehensive system management for physical and virtual Oracle hardware and heterogeneous operating systems. This chapter describes all of the features and capabilities of the product and identifies the enhancements in the current release.

- [Oracle Virtualization](#) Improved
- [Virtual Datacenter](#) New
- [Oracle Engineered Systems](#) New
- [Oracle Solaris 11](#) New
- [Storage Resources](#)
- [Network Resources](#)
- [Command Line Interface](#) Improved
- [Extensive Monitoring](#)
- [Asset Types](#)
- [Users and Roles](#) New
- [Database Support](#) Improved
- [High Availability](#) Improved
- [Automatic Service Requests](#) New
- [Asset Discovery and Management](#)
- [Automated Provisioning](#)
- [Managing the Update Process](#)
- [Dynamic Incident Management](#)
- [Comprehensive Reports](#)

Oracle Virtualization

Virtualization is a powerful method of maximizing the utilization of systems. You can virtualize operating systems or hardware platforms. Oracle Enterprise Manager Ops Center enables you to discover, provision, update, monitor, and manage the virtual systems, as if they were physical assets.

New in This Release

In addition to Oracle Solaris Zones and Oracle VM Server for SPARC, Oracle Enterprise Manager Ops Center now works with Oracle VM Manager to manage Oracle VM Server for x86 virtual systems. Oracle Enterprise Manager Ops Center can discover existing Oracle VM Manager instances. After discovery, you can manage these virtual systems from either the Oracle VM Manager user interface or from the Oracle Enterprise Manager Ops Center user interface.

Oracle Solaris Zones

Oracle Enterprise Manager Ops Center manages virtual operating systems. Oracle Solaris Zones creates multiple identical virtualized operating system environments within a single instance of the Oracle Solaris operating system running in the global zone. You run applications in different zones, isolated from each other, while the underlying operating system resources are managed and administered by the global zone.

New in This Release

You can now use deployment plans to create zones. You can manage the zones through their life cycle.

When multiple global zones are in a server pool, their zones have high availability. If one global zone fails, its non-global zones can be migrated to a different global zone in the same server pool because the server pool shares all the network and storage resources.

Oracle Enterprise Manager Ops Center provides improved utilization metrics.

You can now change a zone at run time without having to reboot the zone.

You can create Oracle Solaris 10 branded zones on an Oracle Solaris 11 kernel.

The network bandwidth is improved because multiple local virtual networks are now supported.

Oracle VM Server for SPARC and Oracle VM Server for x86

Oracle Enterprise Manager Ops Center manages virtual hardware. Each virtual system can run a full instance of a unique operating system. You can run full instances of Oracle Solaris and Linux operating systems inside a single Oracle VM Server. Use hardware virtualization in the following scenarios:

- Reduce the number of servers you support by hosting applications on the Oracle VM Server instead of on multiple servers.
- Use logical domains to host different operating system kernels in the same server.
- Maximize security by isolating operating system and hardware resources

When you provision a server with the Oracle VM Server software, a control domain is established. The control domain manages its logical domains. Each logical domain has its own operating system, resources, and identity within a single system.

Use Oracle Enterprise Manager Ops Center to create and provision logical domains, including allocating the system's memory, CPU threads, and devices, and to monitor performance.

New in This Release

You can now create Oracle VM servers for both the SPARC and x86 platforms. In addition to Oracle Solaris VM Server for SPARC software, Oracle Enterprise Manager Ops Center works with Oracle VM Manager software to support Oracle Solaris VM Server for x86 software.

Server Pools

A server pool maximizes capacity by balancing the load of several of virtualization hosts. Any virtualization host in the server pool can be moved from one physical system at capacity to another under-used physical system. You can set policies to balance the load automatically, or you can choose to be notified of system load conditions and change the balance manually.

New In This Release

Virtualization technologies now have common features. Instead of virtual pools for Oracle VM Server for SPARC, this version of Oracle Enterprise Manager Ops Center has server pools for each virtualization technology: Oracle VM Server for SPARC, Oracle VM Server for x86, and Oracle Solaris Zones. A server pool must contain only virtualization hosts of the same type, but they are managed in the same way.

Server pools of Oracle Solaris Zones and Oracle VM Servers for x86 now have the ability to migrate and restart guests of a failed virtualization host on other members of the server pool.

Virtual Datacenter**New In This Release**

Virtual data centers extend server pools to support isolated, secure, custom, and tuned environments for end-user accounts. Virtual datacenters are designed to drive policy-based use of resources. When the Enterprise Controller is installed on an Oracle Solaris 11 system, Oracle Enterprise Manager Ops Center can create and manage virtual datacenters.

From a virtual datacenter user account, you run applications that rely on the resources allocated to the virtual datacenter. You can perform operations within the virtual datacenter from the user interface or you can use the Infrastructure as a Service (IaaS).

Oracle Enterprise Manager Ops Center's IaaS web service provides an API and CLI for managing the physical or virtual resources in the virtual datacenter. You can use the IaaS web service to perform the following tasks:

- Create, update, and delete the templates for creating virtual servers.
- Create and manage virtual servers.
- Manage block storage in an elastic, on-demand way.
- Maintain virtual networks for security.
- Manage access to individual virtual servers using key pairs.
- Register server templates created in Oracle Virtual Assembly Builder.

Oracle Engineered Systems

New In This Release

Oracle Engineered Systems are hardware and software integrated systems that are designed for a specific enterprise purpose. The cost and complexity of the IT infrastructures is reduced and productivity and performance is increased. Oracle Engineered Systems are delivered with a dedicated customized instance of Oracle Enterprise Manager Ops Center to do the following:

- Discover all components of the Engineered System and provides a view of the full rack. Unify the management of servers, storage, and network fabric.
- Simplify the management of the virtual infrastructure.
- Monitor and maintain all assets and their components throughout their life cycle: servers, switches, operating systems, ZFS storage arrays, and all firmware and software.
- Connect to My Oracle Support to handle automatic service requests (ASR) and incident resolution.

SPARC SuperCluster T4-4

SPARC SuperCluster is an Oracle Engineered System that integrates SPARC compute nodes, a ZFS storage appliance, InfiniBand switches, and the Exadata Storage Server into a multi-rack system. The SPARC SuperCluster architecture includes Oracle Solaris 11 or Oracle Solaris 10, Oracle Fusion software and the Oracle Solaris Cluster software. The Oracle Engineered System is a complete stack of hardware and software, computing, storage, and network that are engineered to work together optimally to provide a database and also a private cloud.

In addition to the contributions that Oracle Enterprise Manager Ops Center makes to all Oracle Engineered Systems, the software provides the following features to this Engineered System:

- A rack view that consolidates firmware information, placement information, and fault information
- Performance analysis
- InfiniBand switch monitoring
- Exadata Storage Server monitoring
- Compute node monitoring
- Oracle Solaris Clusters management
- Hardware fault management
- Virtualization technologies management

Oracle Exalogic Elastic Cloud

The Oracle Exalogic Elastic Cloud Engineered System delivers a standalone Oracle Enterprise Manager Ops Center that is pre-installed on a factory-packaged Exalogic system. The embedded Oracle Enterprise Manager Ops Center is an integral part of Exalogic Control software and offers full set of Oracle Enterprise Manager Ops Center built-in functionality to provide Exalogic platform administration operations. It also provides features to view the Exalogic machine as an appliance, monitor and manage

the Exallogic hardware, and cover the replacement part of the fault management lifecycle.

In addition to the contributions that Oracle Enterprise Manager Ops Center makes to all Oracle Engineered Systems, the software provides the following features to this Engineered System:

- A rack view that consolidates firmware information, placement information, and fault information
- Integration with Oracle VM Manager, Oracle Virtual Assembly Builder, and the Exallogic Exabus.
- InfiniBand switch monitoring
- A console for launching the user interfaces for the Sun ZFS Storage 7320 appliance and the InfiniBand switches
- Serial console access to the service processors of compute nodes, switches, and storage.
- IaaS API and Cloud Management Console
- Incident reporting for the Sun ZFS 7320 Storage appliance.

Oracle Solaris 11

New In This Release

Oracle Enterprise Manager Ops Center supports Oracle Solaris 11 throughout its life cycle: provisioning, updating, managing boot environments, monitoring, and gathering resource utilization data.

The Oracle Solaris 11 Image Packaging System (IPS) Repository is one of the Oracle Enterprise Manager Ops Center's Software Libraries. You can perform basic management tasks on the IPS and use the data in the IPS for auto-install, provisioning, and update operations.

The following IPS operations are supported:

- Mirroring the repository on the Enterprise Controller and Proxy Controller
- Configuring the IPS software libraries
- Associating proxy IPS libraries to your managed Oracle Solaris 11 systems
- Viewing IPS software repository content
- Viewing additional IPS library types, which enables support for managing boot images and auto install scripts
- Updating IPS packages in the library
- Operating system compliance reporting

Information about both Oracle Solaris 11 and Oracle Solaris 10 boot environments is displayed and reported in a similar way:

- OS View is a table of all boot environments.
- Compliance reports and comparisons include boot environments.

The Automated Installer for Oracle Solaris 11 is integrated with the provisioning deployment plans. This feature requires that both the Enterprise Controller and a

Proxy Controller use Oracle Solaris 11 so that the Proxy Controller can retrieve the IPS image from the Enterprise Controller's IPS repository.

Oracle Enterprise Manager Ops Center also supports SPARC WAN boot. This method becomes the default action when it is applicable.

Storage Resources

New In This Release

As in the previous version, storage libraries support virtualization hosts. However, they are now organized into the following categories:

- Block storage libraries contain groups of Logical Unit Numbers (LUNs) that you can associate with server pools, Oracle VM Server for SPARC and Oracle VM Server for x86, and global zones to store their data.
- File system storage libraries, whether local or shared, store virtual images and data.

The previous version's libraries that were called Fibre Channel storage are now called Block Libraries. In addition to Fibre Channel LUNs, iSCSI LUNs are now supported.

Oracle VM Storage Connect

Oracle Enterprise Manager Ops Center shares the capability of Oracle VM Manager to manage storage devices of various vendors so that all types of virtualization hosts have uniform support. Oracle VM Storage Connect is an application programming interface (API) that exposes the storage device's features and attributes to Oracle Enterprise Manager Ops Center. Storage vendors use the API to create plug-in software. An Oracle Enterprise Manager Ops Center storage administrator enables the plug-in software.

Dynamic Storage

A storage server can support a dynamic block storage library. These storage libraries are created by discovering an iSCSI SAN Storage Array. Because Oracle Enterprise Manager Ops Center discovered the storage array, it can create and manage additional LUNs when required. Volume groups and file systems are also supported.

Network Resources

New In This Release

Oracle Enterprise Manager Ops Center now manages Layer 2 and Layer 3 network fabrics. Through integration with Oracle network switches, the software controls both physical and logical fabrics used in data centers. New features include management of ports, private networks, and InfiniBand partitions and Ethernet VLANs.

All managed networks now reside in a container called a network domain. Oracle Enterprise Manager Ops Center provides one network domain called the Default Network Domain. All existing managed networks are in this network domain and any new networks you create are in this domain. However, for virtual datacenters, you create a new network domain and then you re-assign a managed network from the Default network domain to the new network domain.

Network Protocols

Enterprise Manager supports both Ethernet and InfiniBand network protocols. While the Ethernet interconnect is the established and common interconnect, InfiniBand maximizes the speed of transactions using the short, multiple connections found in clusters and data centers. For Linux operating system, Ethernet over InfiniBand (EoIB) and Internet Protocol over InfiniBand (IPoIB) is supported.

Some environments have a mix of IPv4 and IPv6. Oracle Enterprise Manager Ops Center is “IPv6-aware.” If an asset has an IPv6 network interface, Oracle Enterprise Manager Ops Center can read it and displays its information, but cannot provision an IPv6 network or use IPv6 networks to discover, monitor, or provision assets.

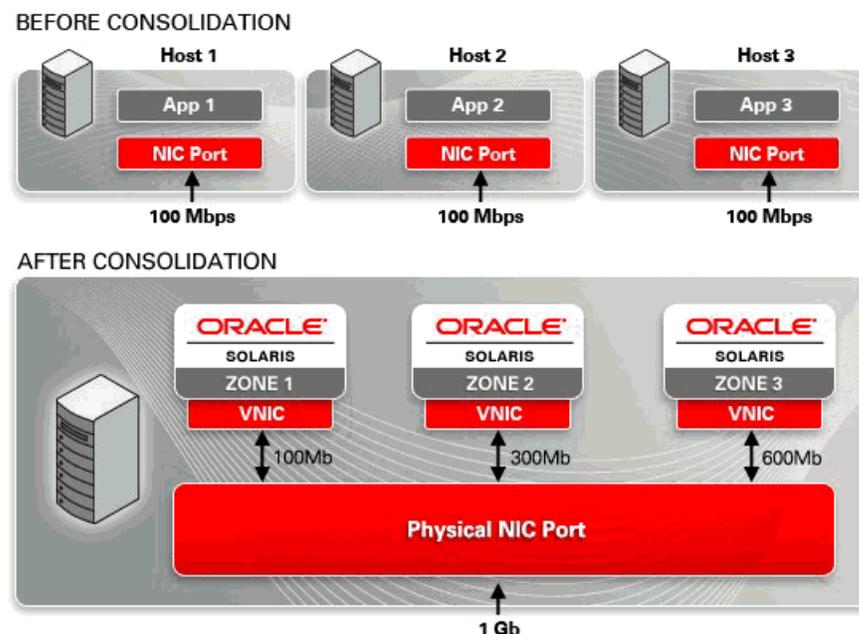
Bandwidth Management for Oracle Solaris 11

For Oracle Solaris, full link aggregation and IPMP groups are supported. Oracle Solaris 11 can manage the bandwidth of a data link, including physical links, virtual NICs, and link aggregations. For a zone, you can specify the amount of network bandwidth that the zone is allowed to consume.

Oracle Solaris Zones and Virtual NICs

Oracle Solaris Zones consolidate NIC ports into a virtual NIC. Instead of each virtual host having a dedicated physical NIC, the NIC can be shared by several zones, at the threshold that each one needs.

Figure 2–1 Before and After Consolidation of NIC Ports



Command Line Interface

The Oracle Enterprise Manager Ops Center Command Line Interface (CLI) is an alternative to the standard user interface for Oracle Enterprise Manager Ops Center. The CLI can perform many, but not all, of the actions of the standard user interface.

New In This Release

To support deployment plans, two modes have been added. The deploy mode specifies the contents of the plan. The deploy-setup mode identifies the plan and the plan's target. Other modes have been enhanced.

Extensive Monitoring

The software is designed to make it easy to monitor and manage a large numbers of assets from a single console. Monitoring profiles and default policies are enabled as soon as assets are managed. You can track system-defined parameters for hardware power consumption, hardware status (temperature, fan speed, and voltage), and key statistics for operating systems such as utilization, load, CPU, and memory. An administrator can adjust the thresholds that trigger alerts for different severity levels (Critical, Warning, or Informational) based on your organization's policies, or disable rules and alert conditions.

An operating system asset's performance and status are displayed in charts, reports, and utilization details. Data is available for up to 6 months to aid in trend analysis. You can display charts for a group of operating systems or an individual operating system. Utilization details include the top five consumers. You can see details, such as CPU and memory usage, for a specific process.

New In This Release

Monitoring improvements include:

- Improved error detection for server hardware
- Fault management analysis for hardware faults.
- Agentless monitoring for operating system assets

When you change a monitoring policy, the change is applied to all assets that are associated with that policy.

For operating systems, the Utilization tab is now called OS Analytics and includes enhanced utilization monitoring for Oracle Solaris and Linux operating systems and provides the data to analyze physical and virtual behavior of an operating system, to improve performance, and to diagnose and correct incidents. The following data is collected:

- CPU Utilization
- Memory Utilization
- Network Utilization
- File System Utilization
- System Load

Asset Types

The management of assets is now broader and deeper. This version of the Oracle Enterprise Manager Ops Center software reports BIOS configuration for x86 platforms, and firmware provisioning for racks, switches, power distribution units, and storage appliances. Oracle Solaris Zones and Oracle VM Server for SPARC that were created outside of the product software's management can now be managed. In addition to the asset types of previous versions, Oracle Enterprise Manager Ops Center can now manage the following physical and virtual assets.

New In This Release

- SPARC T-4
- SPARC Enterprise M4000
- Oracle 10GigE and InfiniBand switches
- Cisco switch embedded in Engineered systems
- Exalogic Elastic Cloud X2-2 Hardware
- Sun Rack II
- Power Distribution Unit
- Switch ports
- Service processors
- Operating systems
- Virtual datacenter
- Oracle VM Server for x86
- Virtual network domain

Users and Roles

New In This Release

More types of roles have been added to the software. These roles give you fine control of the actions that each user can take and the assets that each user can view.

The user experience can be customized for each user and role. The starting view after log in, the timeout interval, and refresh interval can be changed. An administrator can modify the available views or actions, based on roles.

You can now add remote directory servers to Oracle Enterprise Manager Ops Center and import their user and role data.

Database Support

New In This Release

Oracle Enterprise Manager Ops Center can now store product data in an embedded or customer-managed Oracle Database Enterprise Edition database. You can set up a database specifically for the Enterprise Controller, or use an existing database that is accessible by the Enterprise Controller.

High Availability

New In This Release

Support for high availability using Oracle Clusterware has been added. You can set up multiple Enterprise Controller nodes and fail over to prevent downtime.

High Availability has also been implemented at the Proxy Controller level. If a Proxy Controller fails, you have the option to migrate assets from the failed Proxy Controller to another Proxy Controller on the same network.

Automatic Service Requests

New In This Release

You can configure Oracle Enterprise Manager Ops Center to generate automatic service requests for some assets. When a hardware fault occurs with an asset, a service request is generated using the credentials and contact information you provided for the asset.

Asset Discovery and Management

Discovery of the servers, storage devices, operating systems, and virtual systems in your data center uses one of several standard protocols, including SSH, IPMI, Telnet, and SNMP. You can also use discover assets by their service tags.

After assets are discovered, they are managed assets and are registered in Oracle Enterprise Manager Ops Center's database. In some cases, Agent Controller software is installed so the asset can be provisioned, monitored, and its firmware and operating system can be updated.

Managed assets are displayed in a hierarchy in one pane of the user interface and are also added to one or more groups based on the asset type. Groups are administrative structures that organize assets so that you can locate an asset quickly and perform operations on all assets of the same type. An asset can belong to multiple groups.

Groups enable you to quickly locate and view assets of a specific type. You can take action on groups, such as running compliance checks on all assets in the group, changing monitoring thresholds and updating discovery credentials. The Services group and subgroups contain all assets organized by the actions for which they can be targets. For example, the OS Update group contains all operating systems that can be updated.

New In This Release

Each discovery method now gives you the option of also managing the discovered assets.

You can discover assets by using specific criteria, by searching for service tags, or by specifying server information.

- **Add Assets Using Discovery Profiles** - This option uses a discovery profile, which specifies the type of asset and the host names or IP addresses to target.
- **Find Assets** - This option lets you perform a Service Tag discovery, then provide credentials for the discovered assets.

Operating systems can now be managed with or without an Agent Controller. When you manage an operating system, you choose whether it is managed with or without an Agent Controller.

The set of deployment plans has been increased to include profiles and plans for Sun ZFS Storage Appliances, Alternate Boot Environments, BIOS Configuration, Oracle VM Server for x86 virtual machines, Oracle Solaris Zones, and Discovery profiles.

Automated Provisioning

Provisioning a complex data center is a daunting task that can be repetitious, inconsistent, and error-prone. Oracle Enterprise Manager Ops Center facilitates firmware and operating system provisioning using a combination of image libraries,

profiles, and deployment plans. You can maintain a library of golden images on the Enterprise Controller and use the profiles and plans to control how, when, and where the images are applied. A user with Oracle Enterprise Manager Ops Center administrator privileges can manage a library of firmware and operating system images and use profiles to establish controls for how and when the images are applied.

A profile is a template or script that defines deployment and configuration requirements. Use profiles to enforce consistency in tasks, such as configuring hardware assets, deploying firmware, provisioning operating systems, and updating Oracle Solaris and Linux operating systems. With profiles, you can consistently define what is allowed, and not allowed, to be installed on a system and enable images to be applied consistently across one or more data centers.

To provide greater automation, you can use deployment plans to define the sequence of operations or steps that must be performed to deploy an asset, the profiles to be used, and the target systems or hosts. When you use profiles as a step in a deployment plan with multiple targets, you can configure many assets simultaneously.

Oracle Enterprise Manager Ops Center provides a comprehensive set of templates for all assets, including the virtualization platforms and logical domains. Deployment templates contain the basic building blocks that you can use to create your customized plans.

Firmware Provisioning

Use firmware provisioning to add or update firmware on servers or chassis. You create and maintain the library of firmware images in the Enterprise Controller Software Library.

A firmware image is a copy of a particular system firmware with associated metadata. The firmware metadata helps determine compatibility between a firmware image and a target system. The required metadata includes the firmware type, what system or systems the firmware is for, the version of the firmware, and any dependent firmware (other firmware on which the firmware depends).

To control how the provisioning job is performed, the administrator creates customized firmware profiles. A firmware profile is a collection of one or more firmware images and policies that defines how to update one or more firmware images on a system. You can also use a firmware profile to generate compliance reports for a set of servers.

After the images and profiles are established, you can schedule firmware update and provisioning jobs to run immediately, or on a specific date and time.

Operating System Provisioning

Operating system provisioning enables you to install supported operating systems onto systems that are attached to your network. You can provision, or install, operating systems from the product's user interface instead of from each individual system.

As in firmware provisioning, administrators maintain a library of operating system images in the Software Library or other repository. To control how the provisioning job is performed, the administrator creates provisioning profiles. After the images and profiles are established, you schedule provisioning jobs to run immediately, or on a specific date and time. You can choose provision a single system or a group of systems.

An operating system profile specifies how to configure an operating system as it installs onto a set of target systems. The profile specifies options, including what

operating system to install, what software groups to install, and what disk partitions and network settings to use. Each profile is associated with a specific operating system image. Each profile describes how to install and configure one operating system image, or the FLAR associated with one operating system image.

Managing the Update Process

Updating operating systems can be a complex, time-consuming, and unpredictable process. You can encounter a seemingly never-ending list of dependencies which you must review for warnings, conflicts, and conditions.

Oracle Enterprise Manager Ops Center is designed to reduce the complexity of updating a large number of diverse operating systems, standardize the patch installation process, minimize downtime, track changes, and automate patching without user interaction. You control the update process, the level of automation, the scheduling, and the number of concurrent updates. You can apply customized controls for one system or a group of systems and schedule the updates to deploy during periods of low usage.

Oracle Enterprise Manager Ops Center supports update management for Oracle Solaris, Linux, and Microsoft Windows operating systems. For enterprise-level users, using Oracle Enterprise Manager Ops Center to update your operating systems offers several key advantages:

- Role-based update permissions – Restrict update capabilities to designated users.
- Custom update policies and profiles – Define which patches to install, patch dependencies, and the level of user interaction. Oracle Enterprise Manager Ops Center provides predefined update profiles apart from which you can create your own customized profiles and policies.
- Update simulations – Identify the required updates and choose whether to download updates in preparation for the actual deployment.
- Job scheduling – Schedule when to run an update simulation or update job. You can run it immediately, define a start day and time, or create a recurring schedule.
- Compliance and update reports – Generate a variety of compliance and other update reports to know the state of your operating system patch levels. You can use the report output to run a new operating system update job.
- Version control and rollback – A snapshot, known as a system catalog, is automatically taken and saved before an operating system update is performed. You can use the system catalog to revert back to a previous version.
- Variety of methods to detect and deploy updates – The Enterprise Controller obtains information about latest updates from the Knowledge Base and operating system vendor sites. You can deploy updates through the update profiles and policies, reports, and system catalogs.

The simulation feature enables you to test update dependencies by simulating an update job before you perform an actual update. You can manage different patching conditions that exist for installing a patch and keep track of the patching conditions. You can run an update simulation on Linux and Oracle Solaris hosts to identify the updates that apply and download updates in preparation for the actual deployment. By running a simulation, you can determine the outcome of the update job and adjust the update policies and procedures for the update before scheduling an operating system update job. You can deploy the update to individual systems or a group of systems simultaneously. This approach adds predictability and consistency in the status of your operating systems.

System Catalogs

To maintain version control, a system catalog is created when the operating system asset is managed and after any action is performed on the operating system. A system catalog is a snapshot of the operating system that contains a list of operating system software components that are installed on the system and a date and time stamp. You can create a system catalog at any time.

For added safety, you can create a system catalog for a system before the update is deployed. If needed after an update, you can quickly and easily roll back to a saved system state.

The system catalogs provide the capability to manipulate the installed software components on a single operating system or a group of operating systems and provide rollback capability. You can save a catalog as a profile, and then use the profile to run an operating system update job. You can compare the catalogs between operating systems and create profiles from the saved catalogs which can be later used for creating systems. You can also make the target system the same as the source system. Modifying a catalog is an alternate option for running an operating system update job to install, uninstall, or upgrade a component. Modifying a catalog does not require an operating system update profile to run the update job. It is a quick way of changing the component configuration in a system.

Methods to Detect and Deploy Updates

The tools and reports vary, depending on the operating system. The procedures for installing updates on Oracle Solaris and Linux operating systems are very similar. The procedures for updating Windows uses the Microsoft System Center Configuration Manager (SCCM) to implement the software updates.

The Linux and Oracle Solaris operating system update functionality enables you to perform updates from the following methods:

- Creating and running an update job for one or more systems
- Updating from an operating system profile
- Modifying a system catalog
- Using Oracle Solaris Live Upgrade to create, update, and deploy an alternate boot environment
- Creating one of several update reports to check for recommended updates, and then deploying the updates

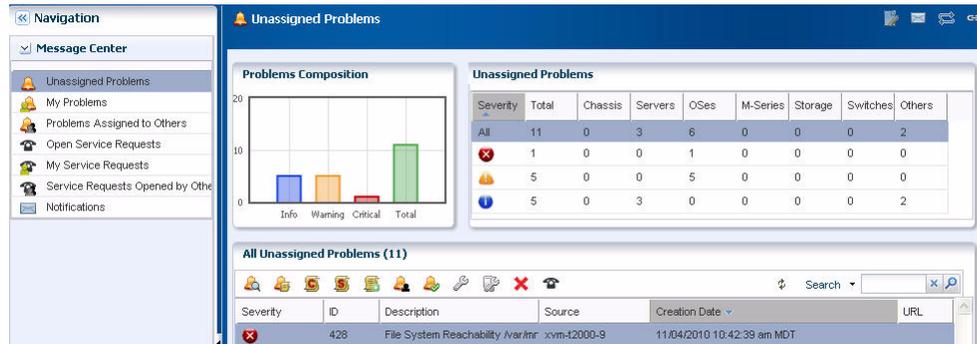
Oracle Solaris Live Upgrade enables you to quickly create an alternate boot environment for your Oracle Solaris operating system, update the boot environment, and deploy the host to production quickly. You can synchronize boot environments and roll back to previous version, if needed.

Dynamic Incident Management

Oracle Enterprise Manager Ops Center uses a help desk approach to managing incidents. When an incident is detected, it appears as a Critical, Warning or Informational alert in the Unassigned Incident queue in the Message Center. You can configure the software to send you notification of an incident to your e-mail address or pager. You can receive notification of all incidents, or filter to receive e-mail or pager notification based on the incident severity.

Use the Message Center to view unassigned incidents, incidents assigned to you, and incidents assigned to others. From this page, an administrator can assign the incident to an authorized user and then monitor the status and resolution. The following figure shows the Unassigned Incidents display in the Message Center, including the composition of the severity levels, a table of incidents, by category and severity, and a detail section.

Figure 2–2 Unassigned Incidents in the Message Center



You can highlight an incident in the detail section to view the incident, any associated annotations, comments, or suggested actions. A variety of annotation options enable you to provide status updates, notes, or a suggested action. Depending on your permission level, you can add, edit, or remove annotations for an incident instance.

More sophisticated annotation options enable authorized users to add annotations to an Incidents Knowledge Base for a specific incident and asset type and associate annotations with an operational plan. This functionality enables you to provide a resolution or an automated response when an incident of this type occurs on an asset.

If an incident on a supported system requires Oracle support, you can file a service request from this page. In addition, you can view the status of service requests submitted through this UI.

Comprehensive Reports

Reports provide you with insight into all phases of the asset life cycle. You can gather more detailed information about job history, firmware, operating system updates, and then export that information to CSV or PDF output. Incident reports export to HTML.

You can create the following reports in Oracle Enterprise Manager Ops Center:

- Incident
- Firmware Compliance
- Update
- Server Provisioning
- Hardware Configuration
- OS Analytics
- Virtualization Analytics

Incident Reports

Incident reports summarize details for a specific managed asset or detailed information about specific incidents.

The Summary Reports provide you with an historical account of the detected incidents. You can create a report for a specific time period, for a specific severity level, status, or type of incident, or for the asset groups affected by the incident. These reports are invaluable in trend analysis and identifying patterns that you can then take steps to mitigate.

The Detail Reports contains detailed information about one or more selected incidents and provides you with an audit trail of the incidents.

Firmware Compliance Report

Firmware Compliance Reports enable you to maintain consistent firmware versions across your data center. You can associate one of your firmware profiles with the report, then run the Firmware Compliance Report to determine if the firmware on the asset complies with your firmware profile's specifications. If assets do not contain the firmware version identified in the profile, you can update the firmware from the report.

Update Reports

As with firmware compliance reports, update reports give insight into the compliance state of the operating system and recommends patches and packages. Generate a report to view the state of your patch levels, and then use the report output to update specific operating systems.

Update reports enable you to check for new patches and security advisories. You can get a general report, or test a system or installed package for available fixes. For auditing purposes, you can create a job history report. Several reports are available for Linux, Oracle Solaris and Windows operating systems.

The following compliance reports are available for all three types of operating systems: Host Compliance - Provides information on whether your system is compliant with security and bug fixes incidents. Incidence Compliance - Provides information about the number of systems to which the selected operating system updates apply.

In addition to the reports listed above, the following reports are available for Linux and Oracle Solaris operating systems:

- **Job History** – Provides a history of operating system update install and uninstall jobs completed by Oracle Enterprise Manager Ops Center on managed systems.
- **CVE Compliance** – Provides information on incidents that are related to specific Common Vulnerability and Exposure Identifiers (CVE IDs) and the systems that should have these incidents installed. CVE IDs are unique, common identifiers for publicly known security vulnerabilities.
- **Distribution Update** – Provides basic information of all known distribution and local incidents.
- **Package Compliance** – Provides the details of the selected packages on your managed system that are compliant or not compliant with the latest recommended version available.
- **Recommended Software Configuration (RSC)** – Provides information about the system compliance for installing a specific application. For example, you can check

an Oracle Solaris operating system for patch requirements before installing Oracle 11g Database.

- **Service Pack Compliance (Linux)** – Provides information on incidents created by the publication and release of a service pack by a vendor. This helps to determine whether your system has the latest service packs released by the vendor.
- **Oracle Solaris Update Compliance (Oracle Solaris)** – Provides information on whether an Oracle Solaris system is compliant with a specific update.
- **Baseline Analysis (Oracle Solaris)** – Helps to check the compliance of systems against newly released Oracle Solaris baselines.

Server Provisioning Reports

You can use this report to obtain a history of server provisioning actions. Run this report to obtain details about the Deployment Plan provisioning activities that occurred over a specified time period. Get specific information about the activity, including who ran the provisioning job, which profiles were selected, and the final outcome.

Hardware Configuration Reports

Use the Hardware Configuration Reports to obtain hardware change history and inventory. Inventory reports enable you to filter by hardware assets and or components. You select the asset and component properties for the report output content and its sorting.

The Hardware Configuration reports enable you to view the following types of information:

- Hardware configuration changes on a server or across a group of servers
- Hardware inventory of various components as reported by the hardware view across all or selected assets
- Hardware inventory based on specified hardware component attributes such as model or part number
- Hardware inventory based on asset type model

Virtualization Analytics

The Virtualization Analytics view displays resource usage of the physical server for each running operating system instance, showing the physical resources consumed by the control domain or global zone, and each non-global zone or guest. Metrics for Oracle VM Server for x86 are available through the Oracle VM Manager.

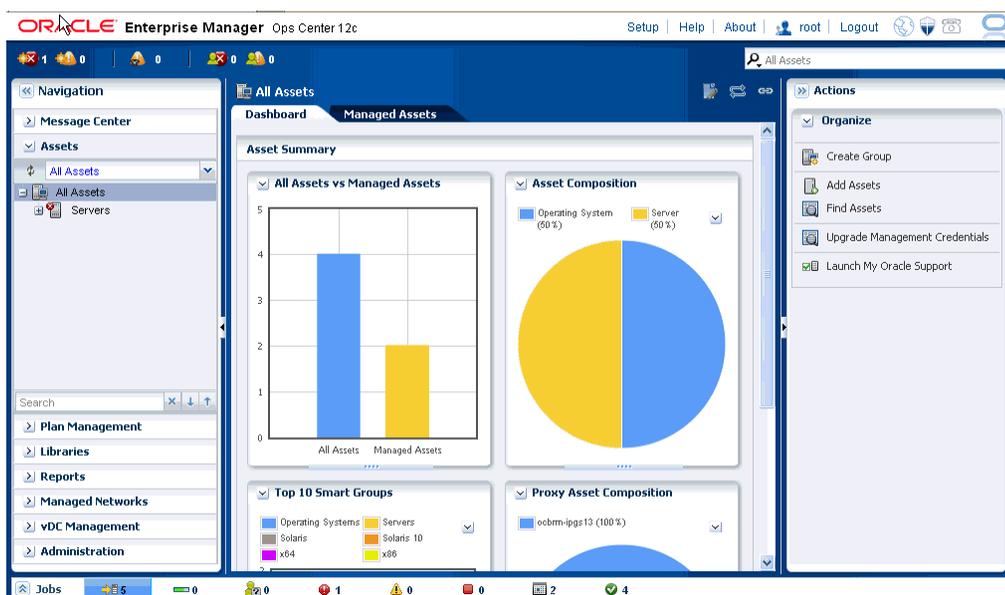
Exploring the User Interface

Oracle Enterprise Manager Ops Center is an enterprise-level datacenter software that manages all the aspects of datacenter. Oracle Enterprise Manager Ops Center displays its information in a browser interface. The format of the information is in text, tables, graphs, and charts, and is organized into hierarchies and tabs. You can view the information and perform the actions according to the role you have been assigned.

Overview of the User Interface

The user interface has a rich set of features that enables you to observe and control your datacenter's assets. These features present the range of information from a high-level overview of your datacenter to the low-level details of a specific asset. You can view the information in the center pane according to your selections made in the Navigation pane and in the Actions pane.

Figure 3–1 User Interface of Oracle Enterprise Manager Ops Center



Oracle Enterprise Manager Ops Center comprises of five panes:

- The Masthead – This pane displays the global functions and information about the Oracle Enterprise Manager Ops Center instance.

- The Navigation pane – This pane consists several drawers that displays assets and objects that are managed by Oracle Enterprise Manager Ops Center instance.
- The Actions pane – This pane displays the actions that operate on the object currently selected in the Navigation pane. The actions of the Actions pane are enabled or disabled based on the state of the object or your role.
Only actions that can directly applied to the object are displayed in Actions pane.
- The Jobs pane – This pane displays the number of jobs in Oracle Enterprise Manager Ops Center, categorized by the status of respective jobs.
- The center pane – This pane displays detailed information of the object that is currently selected in the Navigation pane.

For incidents, hover your mouse over the incident icons at the left-side corner of the user interface to know more about the incidents.

Status of Your Session

Oracle Enterprise Manager Ops Center displays the following icons in the title bar. To view information about the status of your session, click the icons displayed in the title bar.

Figure 3–2 Icons in the Title Bar



- Setup – Sets roles and preferences for the user.
- Help – Opens help for Oracle Enterprise Manager Ops Center to provide an aid that is necessary to accomplish a task or satisfy a need.
- About – Describes legal notices for Oracle Enterprise Manager Ops Center.
- Your Account – Describes your account details and information.
- Logout – Logs you out of the application.
- Status of Internet Connection – Indicates whether Oracle Enterprise Manager Ops Center is connected to Internet access.
- Status of Knowledge Base Service – Indicates whether Oracle Enterprise Manager Ops Center is connected to Knowledge Base Service to obtain the latest operating system updates from My Oracle Support.
- Status of My Oracle Support Services – Indicates whether Oracle Enterprise Manager Ops Center is connected to My Oracle Support. You must enter a valid My Oracle Support (MOS) credential to be connected.

For more information about My Oracle Support credential, see My Oracle Support Account at the following web site:

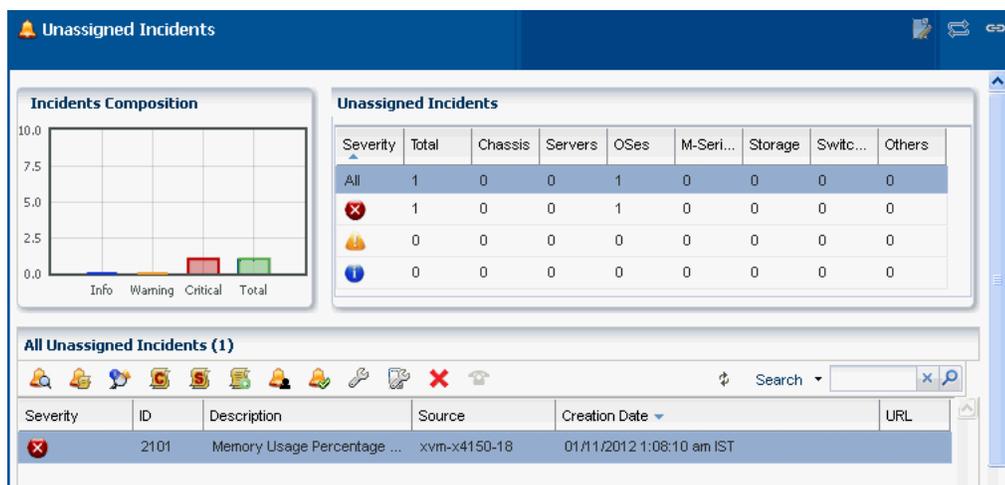
<https://support.oracle.com>

Message Center

Oracle Enterprise Manager Ops Center displays, and manages incidents, generates notifications, displays service requests, and the warranty information of an asset.

You can view details about the unassigned incidents in the Unassigned Incidents queue in the Message Center. The Message Center displays the composition of incidents, the severity level for different types of assets along with the severity status icon, and all unassigned incidents along with Severity, Incident ID, Incident Description, Incident Source, Incident Creation Date, and URL. Hover your mouse on an unassigned incident to view details such as Duration, Assigned Date, Suggested Actions, Owner, Source and so on.

Figure 3–3 Unassigned Incidents in Message Center



You can view incidents that are assigned to you in the My Incidents queue of the Message Center. A bar chart in the Incidents composition section displays the number of new incidents by severity. The page also displays a table that categorizes the incidents by severity and type of asset. You can select an incident at All My Incidents section to perform the following operations.

- View Alerts – View the alerts that comprise an incident.
- View Annotations – View all comments and notes that are created by alerts and any operation related to the incident. You can also view any suggested actions associated to the type of incident.

You can edit or delete the annotations that you have created. An administrator has the privileges to edit or delete any annotation.
- View Possible Impacts and Causes – View the possible causes and impacts of an alarm.
- View Comments – You can view all comments associated with the selected incident. You can also add a comment to an incident.
- View Suggested Actions – You can view all actions in the Incident Knowledge Base that are related to the incidents, and any actions entered specifically for the incident through Add Annotation. To include the suggested action in the Incident Knowledge Base, click the check box "Save this annotation in the Incident Knowledge Base to associate the annotation with all incidents of this type and severity".
- Assign Incidents – You can assign one or more incidents to the user. The table enables multiple selection of incidents to be assigned to the user.
- Add Annotation to Incidents – You can add a comment or a suggested action to one or more incidents. When you add a suggested action, you can add an

associated Operational Plan to the suggested action and you can save and execute it.

When you add comments, you cannot add an associated Operational Plan. To include the comment or suggested action on any incident with the same type and severity, click the check box "Save this annotation in Incident Knowledge Base to associate the annotation with all incidents of this type and severity".

- Acknowledge Incident – Acknowledging an incident changes the state of one or more incidents to Acknowledged to indicate you are investigating. This action moves the selected incidents to the "My Incidents" category.
- Take Action on Incidents – Indicates that you can take appropriate action on one or more incidents of the same type, with the same attribute.
- Mark Incidents as Repaired – It moves the state of one or more incidents to "Being Repaired". Do not take any actions on the source of the incident.
- Close Incidents – While an incident remains open, the continued monitoring of the asset generates alerts. When you close an incident, the continued monitoring creates a new incident.
- Open Service Requests – Opens a service request for the incident. You must connect to My Oracle Support to open a service request.

Similarly, you can view the incidents that are assigned to others by clicking Incidents Assigned to Others.

Message Center facilitates in viewing all your open service requests, and also lets you create service requests. You can view the service requests that are opened by others.

Message Center lets you delete a selected notification or delete all notifications.

Below the title bar, a set of icons summarizes the Incident status, as shown in [Figure 3-4](#). The icons are Unassigned Critical Incident, Unassigned Warning Incident, All Relayed Incident, My Critical Incident, and My Warning Incident. The number next to each icon indicates the count of incidents for the particular status. Hold or hover the mouse cursor over the icon to view information that identifies the most recent incident. These icons keep you updated of the incident status while you perform other operations.

Figure 3-4 Incidents Count in the Masthead



To view more information about the incidents, click these incident icons. They redirect you to the corresponding category in the Message Center. For example, clicking the Unassigned Warning Incident icon below the title bar redirects you to Message Center and displays detailed information about those number of Warning Unassigned Incidents in the center pane. Similarly, when you click Unassigned Critical Incident, it redirects you to Message Center and displays detail about the Critical Unassigned Incidents. Double-click the selected incident to view details such as Summary, Membership Graph, Status, Compliance Reports and so on. For more information about Incidents, see *Oracle Enterprise Manager Ops Center Feature Reference Guide*.

Navigation Pane

The Navigation pane contains the following sections:

- Message Center – It displays, and manages incidents, generates notifications, displays service requests, and the warranty information of an asset.
- Assets – It lists all the assets of Oracle Enterprise Manager Ops Center. Assets display standard views, user-defined groups, and resource management views. In the case of server pools, Assets also governs the virtualization hosts' placement and migration, and the server pool's networks and storage.
- Plan Management – It displays Deployment Plans and Profiles that are used to install, provision, and update one or more servers in Oracle Enterprise Manager Ops Center. It also displays Monitoring Policies, Operational Plans, Incidents Knowledge Base, and the credentials that are used in Oracle Enterprise Manager Ops Center.
- Networks – Networks display all the networks that are discovered, declared, and created in Oracle Enterprise Manager Ops Center. It also displays discovered fabrics.
- Libraries – Software libraries stores images, operating system updates components (policies and profiles). Storage libraries list different NAS, iSCSI, and FC storages that are known to Oracle Enterprise Manager Ops Center.
- Reports – It lists the various types of reports that you can create, such as Operating System Reports, Incident Reports, Firmware Reports, and Additional Reports.
- vDC Management – It stores and manages a set of physical resources, and makes them available as virtual resources to virtual datacenter accounts.
- Administration – It performs administrative functions, such as user administration, logs, and the status of service, including the version and upgrades available for the Agent.

Only the Administrator of Oracle Enterprise Manager Ops Center can access the Administration drawer. The administrator can change any configuration for the Enterprise Controller, Proxy Controllers, LDAP directories, users and so on.

Click the right-arrow next to the section title to open the section and see its available resources and options. You can open only one section at a time.

Figure 3–5 Assets Drawer of Navigation Pane

When a new asset is discovered, or when a job or a task is completed, the information changes in Oracle Enterprise Manager Ops Center, and the user interface refreshes automatically. When you do not see the new asset in the Assets pane, click the Refresh symbol in the Asset section of the Navigation pane to get the latest lists of assets. Similarly, click the Refresh symbol in the Jobs pane to view the latest list of jobs.

The Asset section of the Navigation pane lists all the asset that are managed by Oracle Enterprise Manager Ops Center, grouped by its type and the required criteria. Even in the smallest data center, Oracle Enterprise Manager Ops Center can display the list of required assets. You can choose one of the following views in these categories to see the lists of assets.

- **Standard Views** – Use the All Assets view to display all managed assets of every type. To filter the view to display one type of asset, use one of the other standard views: Operating Systems, Chassis, and Servers. Click the plus symbol to display the subordinate or individual assets.
- **Resource Management Views** – Use Resource Management View to filter the assets in the form of Server Pools, Storage, Racks, Oracle Solaris Cluster, and Oracle Engineered Systems.
- **User Defined Groups** – Use the User Defined Group to filter the assets according to user definitions. When you create a group, this customized list becomes the new default view. A list shows a hierarchy of assets.

Each asset and its status is represented by an icon. These icons distinguish one type of asset from another type. A quick scan of the asset hierarchy displays the servers that have a Linux operating system or an Oracle Solaris operating system, and also finds any unconfigured assets.

In an Asset hierarchy, an incident associated with an asset is notified by a **badge** that appears next to the asset icon. Badges show the current status of each asset like running, shutdown, locked, and suspended. When the incident is of a high priority in the membership group, the badge appears next to the parent asset in the asset hierarchy. The system removes the badge after the incident is acknowledged, marked repaired, or closed.

Note: Badges are special types of icons that describe the type of incident associated with the asset.

Along with the assets, the Navigation pane shows all other elements that are managed by Oracle Enterprise Manager Ops Center, such as, plans and profiles, networks, libraries of images and data, reports, and administrative functions. Click the right arrow on the title bar to view the hierarchy of these items.

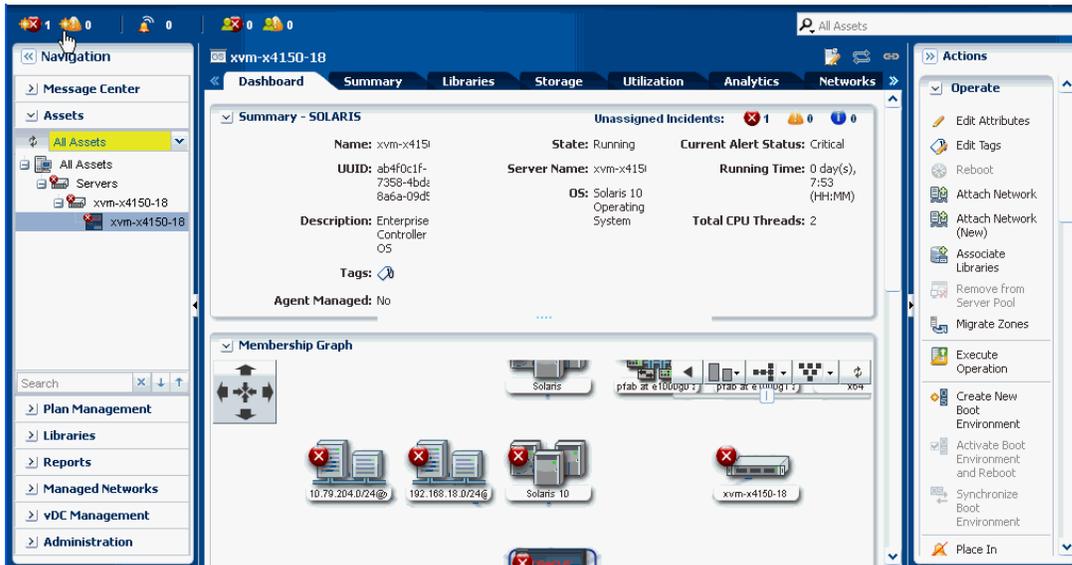
The center pane displays information according to your selection in the Navigation pane. The center pane is where you do most of the work. To increase the size of the center pane, close the Navigation pane. Click the left double-arrow in the title bar of the Navigation pane, to collapse the pane. To select another asset, expand the Navigation pane again by clicking on the right double-arrow.

For example, when you select the Server node of Assets section in the Navigation pane, the center pane displays the information about the Managed Members, and Unmanaged Members. Under the Server node, when you select a server, the center pane displays information about the Server's Hardware, Incidents, Service Requests, Rules, Jobs, Configurations, and Summary details. When you select the Operating System in the Asset section of Navigation pane, the center pane displays the Analytics, Incidents, Terminal, Storage, Jobs, Configuration, and the Summary of the Operating System.

Similarly, when you select All Assets node in the Assets section, the Action pane displays options to create, find, and add assets. When you select Server in the Assets section, the Actions pane displays the related actions to Execute Operation, Edit Tags, Refresh and so on. Further selection of the operating system in the Assets section of Navigation pane displays operations related to the operating system like Creating New Boot Environment, Executing Operation, Attach New Network, Edit Tags, Edit Attributes, and so on.

Note: The tabs, and information displayed in the Center Pane and the Actions Pane changes depending on what asset is selected in the Navigation Pane. The Center Pane and Actions Pane displays information and tabs according to the assets selected in the Navigation Pane.

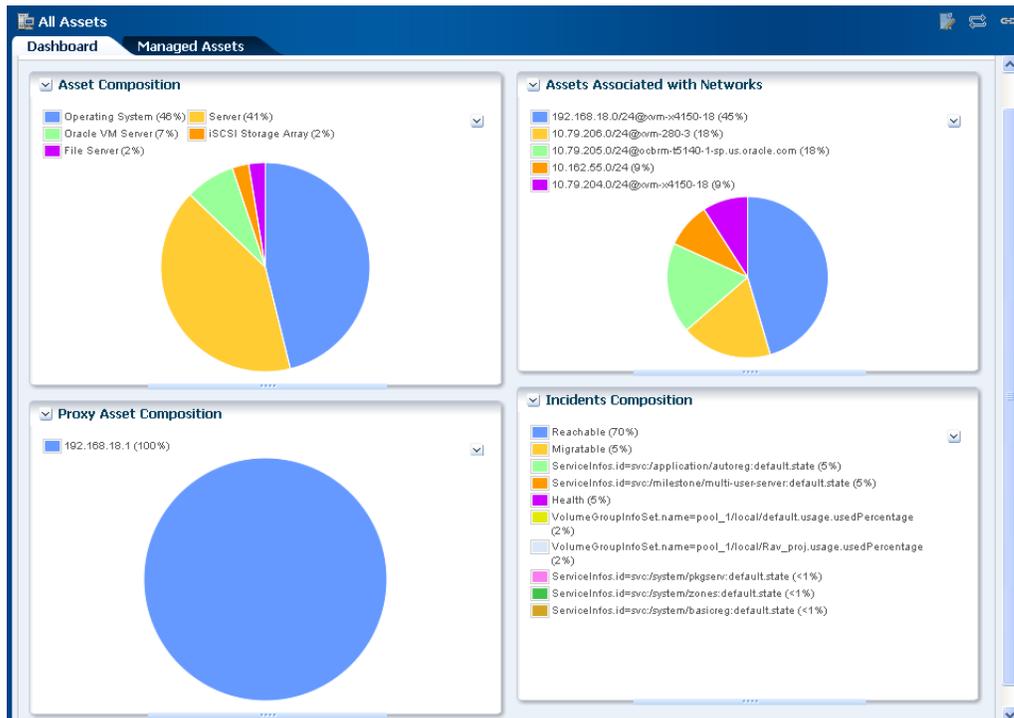
Figure 3–6 Details of Asset Displayed in the Center Pane



Center Pane

The preliminary display, where no asset is selected, gives an overview of the assets that are managed by Oracle Enterprise Manager Ops Center. Each section represents the types of assets in a different type of chart. To identify the asset or asset type, hover the mouse on that portion of the chart.

Figure 3–7 Center Pane



Any selection in the Navigation pane changes the display in the center pane. Allow time for the information to finish loading in the Membership Graph, depending on the complexity of your selection.

For most types of assets, the center pane shows a dashboard of standard information about the selected asset, a Membership Graph that shows its relationships, and a status summary that includes information about the unassigned incidents. Use the scroll bars to view all the information. For some types of assets, you need to click the right double-arrow button to view all the tabs.

You can edit, and refresh the details of an asset that are displayed in the center pane. Click Edit icon to edit the summary details of the selected asset in the Summary tab of the center pane. Commit the changes by clicking the Save icon or Cancel to ignore any change. A pop-up message displays information about the successful commit in the application.

The center pane also has icons that perform an action on the selected item, depending on the drawer selected in the Navigation pane. These icons are View Alerts, Close Incidents, Open Service Requests, Add User, Manage User Roles and so on.

Click Refresh to reload the latest information in the center pane.

Some types of assets have additional sections such as Services, Status, Compliance Reports, and File Systems. You can collapse these sections to hide the display and to prevent the information from refreshing. Click the down-arrow in the corner of the section to hide the section. Click the resulting right-arrow to reveal the section.

Click the Refresh symbol in the upper-right corner of the center pane to view any new information.

Tabs

Some drawers of the Navigation pane display their details in the form of tabs in center pane. With your setting preference, you can set up any tabs in an object to be the default tab. Dashboard or Summary can be the default tab for those selected drawers.

In case of assets selected as a drawer, the Dashboard tab displays a high-level overview of the asset. Every group and managed asset has a dashboard tab that provides a Summary, a Membership Graph, and the Monitoring status. The Dashboard tab displays additional information, depending on the type of asset selected in the drawer.

Dashboard enables you to customize your display preference by changing the position and height, or by collapsing or expanding any panel of the dashboard. The set preference is saved and used at the time of your next login. The same display preference is applied to other dashboards of the same type for other assets. For example, when you move the Status panel to the top for a dashboard of the selected server, at your next login, you find the Status panel at the same new location. When you select another server, you find the Status panel at the same new location of the dashboard.

When you select a group of assets, the Summary tab describes about all members of a group, and charts to identify the most active and least active members. To know more about the asset, click one of the tabs. Click the right double-arrow button to view the remaining tabs when there are too many tabs to fit into the center pane. Hold or hover the mouse over the value in the table to see its definition.

Charts are included in the Dashboard, Summary, and the Charts tab. Charts give access to the data collected by Oracle Enterprise Manager Ops Center for all the assets all the time. Hover the mouse over a portion of the chart to view the value it

represents. On the Dashboard, you can hide the legend for a chart and the chart itself. Hide the legend when you want to see more details in the chart. Hide the entire chart to focus on another part of the center pane. Click the down-arrow button to hide and click the right-arrow button to show.

The Charts tab, display different charts. Right-click one of the charts to display a submenu of the following actions to customize the chart:

- Select to pick a point on the line and display its values.
- Zoom to concentrate on a portion of the chart.
- Move to change the location of the chart.
- 100% to restore the original chart.
- Select All
- Property to display a table of all the values in the chart. You can control the scope of the chart by increasing or decreasing the time period of the data collection.

You can export your chart data in one of the following formats:

- CSV
- XML

Select one of the following time period to export your chart data.

- Current View
- 6 months

The display of the tabs change in the center pane depending on the type of asset selected in the Navigation pane. For example, the display of tabs change in center pane when a hardware asset or an operating system is selected. Center pane displays some common tabs such as Dashboard, Monitoring, Jobs, and so on. On the selection of an asset in the Navigation pane, the center pane displays information about incidents in Incidents tab. You can view the alerts, incidents composition, and the unresolved incidents for the selected asset.

Administrating Enterprise Controller displays its information in various tabs like Summary, Configuration, Storage Libraries, Proxy Controller, and Logs.

You can select a template to view the template details or create a deployment plan from the templates tab in Plan Management. Existing Deployment Plans tab helps you in viewing a collection of profiles and plans that enables using the software to perform the tasks needed to maintain, monitor, and manage the infrastructure of your datacenter.

Oracle Enterprise Manager Ops Center uses libraries to store and manage cached data, images, packages, and metadata. It displays all its information through Summary, Usage, Disks, Incidents, and Monitoring tabs.

Networks describe about the network domains that are created. Dashboard tab summarizes details about the network type, MTU, IP Range, Bandwidth, status of unassigned incidents, and recent incidents. Network Details tab displays information about the Network IP, Netmask, Network Type, Network Name, and various other information about the network domain. Other tabs of Managed Network that provide more information about the network domain are IP Address Allocator, Network Services, Network Connections, Incidents, and Monitoring.

Membership Graph

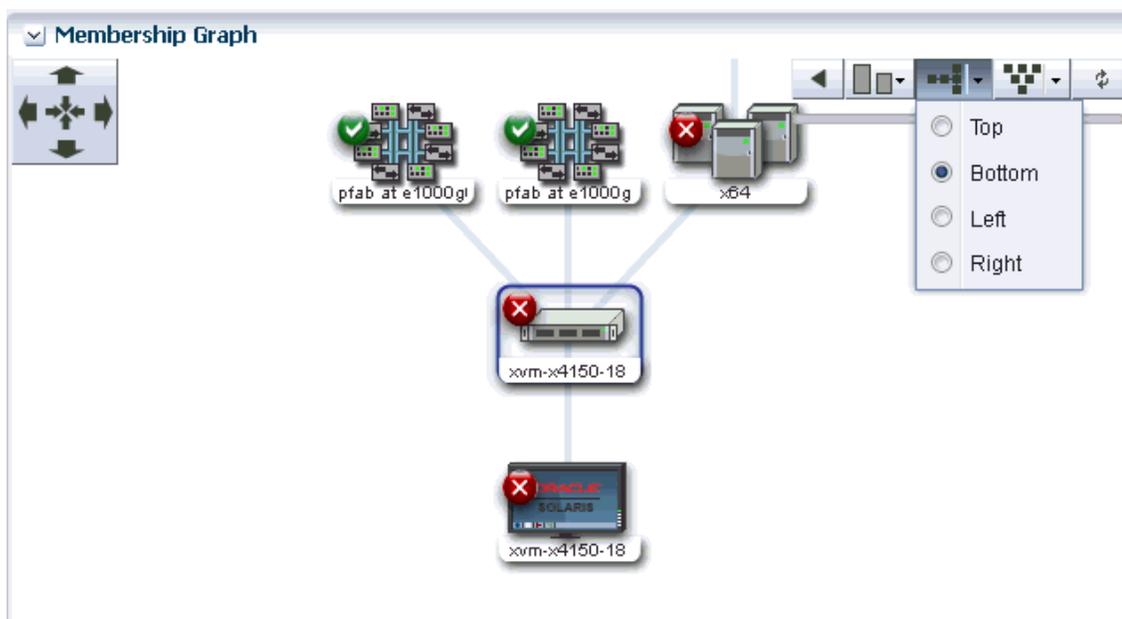
The Dashboard tab is the default display of the center pane, and the Membership Graph is a part of the Dashboard tab. The Membership Graph shows the relationships between the assets that are selected. Depending on what you select in the Navigation pane and on your datacenter's organization, the Membership Graph can have a single object or multiple objects. To control the view, you can use these options:

- Use the scroll bar for moving the display and bringing the assets in large graphs into view.
- Use view controls to move the Membership Graph left and right, and up and down. These view controls are two sets of arrows: four inward arrows and four outward arrows. Click one of the outward arrows to move the Membership Graph. Click one of the inward arrows to center the graph in the center pane.
- Use the orientation controls to change the orientation of the graph. The hierarchy can be presented from the top down or from the bottom up. If the hierarchy is flat and wide, a more convenient display might be to change to a horizontal display so that the top is now on the left or right. Click the left arrow to restore the display.
- Drill into the graph. When you choose assets or a group at the top of a hierarchy, the Membership Graph consolidates the display of the assets so that the graph is not unwieldy. Click in the graph to show the actual members.

Hover your mouse on the desired icon in the Membership Graph to view details about the type of asset like name, description, type, and tags. Double-click the icon in the Membership Graph to reach that asset in the Navigation pane and also view its detailed description in the Dashboard tab of center pane.

For an incident, the warning, and critical icons appear next to the asset. These icons also appear as a badge on the asset and the asset group in the Navigation pane.

Figure 3–8 Membership Graph



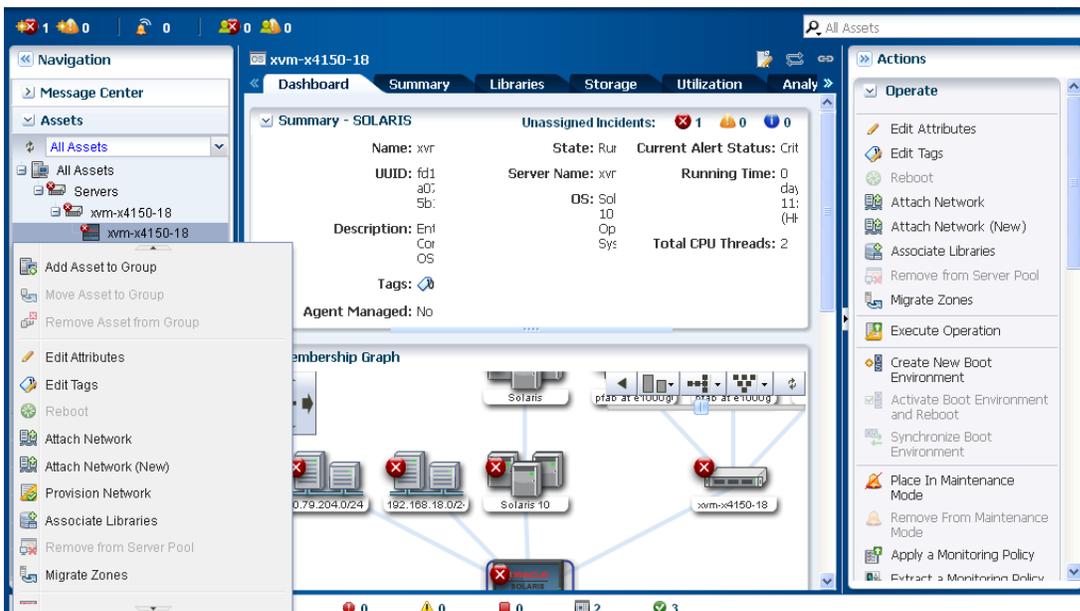
Click the Refresh icon at the top on the right side to refresh the Membership Graph.

See the section [Establishing Your Account Preferences](#) for more information about setting the default display preferences for Membership Graph.

Actions Pane

The Actions pane is used to manipulate assets, and to release commands. Your selections in the Navigation pane or center pane change the display of operations in the Actions pane. Depending on the selection of asset in the Navigation pane, the set of available actions changes in the Actions pane. To see the available actions for an asset at any time without selecting it, right-click the asset in the Navigation pane. This is also convenient when the Actions pane is closed and only the icons for the actions are displayed.

Figure 3–9 Available Actions Icons for an Asset



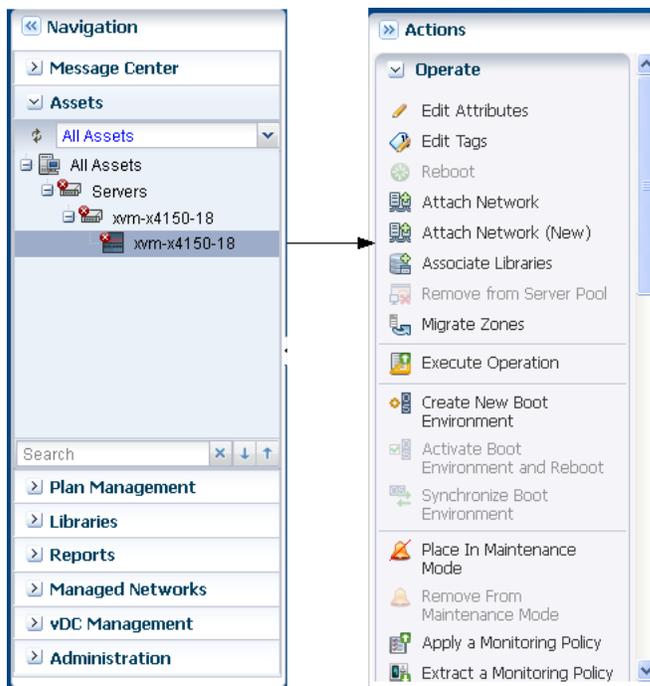
The Actions pane is further subdivided into four sections – Operate, Organize, Deploy, and Update. An action is unavailable only when:

- you have not selected an asset to perform that action. For example, to perform an action on a server's operating system you must select the operating system. The action is unavailable until you select the operating system asset that is listed under the server.
- your role does not permit the action.

The Actions pane help you run an operation, edit tags, place the asset in maintenance mode, organize an asset to defined groups, manage assets, installing and deploying a Server on the type of selection of an Asset.

At any time, when you are not running commands, you can increase the size of the center pane by hiding the Actions pane. In the Action pane's title bar, click the right double-arrow to collapse the pane. The icons for the available actions are displayed without text. Hover your mouse over the available action icons in the collapsed state to view the action names. To select another action, click its icon or expand the pane by clicking on the left double-arrow button to be able to select the names of the actions.

Figure 3–10 Actions for an Asset



Jobs Pane

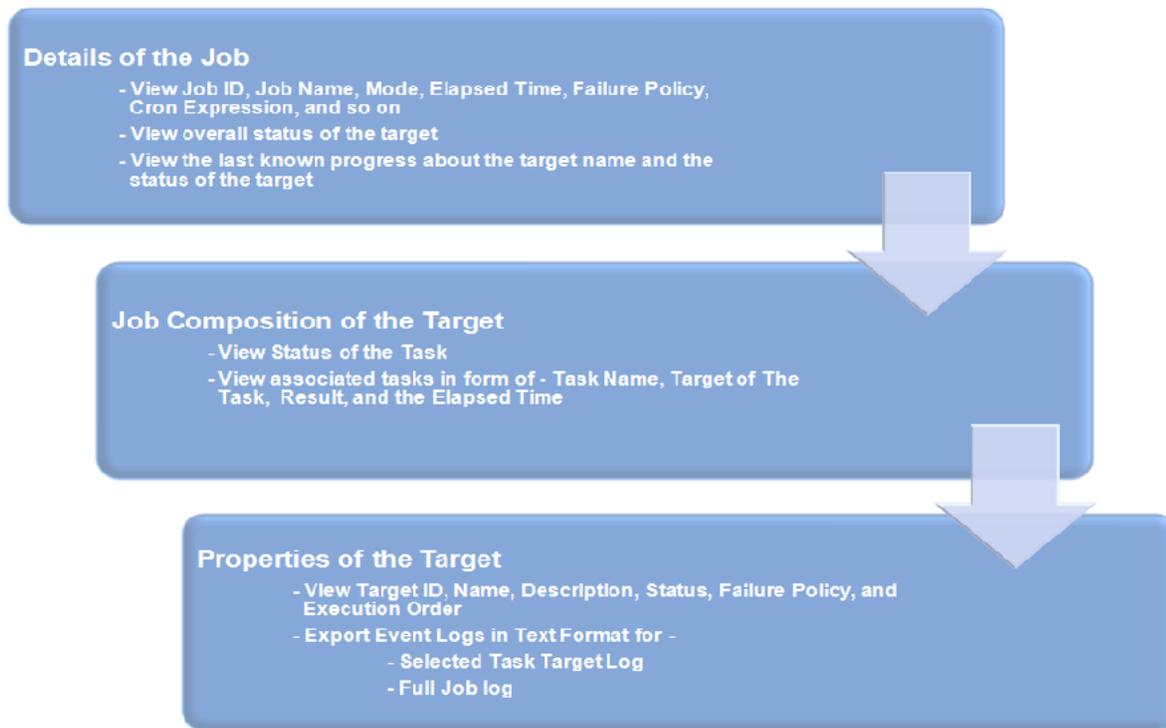
Every action creates a job. The Jobs pane at the bottom of the user interface displays a count of all jobs according to the status of each job. To see the status type, hover the mouse over the Job icon. Some jobs have many steps. To view the progress of a job, select a job, and then click the View Job Details icon.

Figure 3–11 Jobs Pane

Status	Job ID	Job Type	Job Name	Mode	Owner	Start / Scheduled Date	Elapsed Time
✓	6	Create Predefined Ass...	-	→	[Ops Cen...	01/12/2012 10:54:44 am IST	00 hr, 00 min, 12 sec
✓	7	Configure-Local-Proxy	-	→	[Ops Cen...	01/12/2012 10:54:44 am IST	00 hr, 01 min, 13 sec
✓	3	Load-Templates	Refresh Te...	→	[Ops Cen...	01/12/2012 10:50:10 am IST	00 hr, 00 min, 54 sec
⌘	5	Scheduled Product Met...	Product Met...	→	[Ops Cen...	01/12/2012 5:30:00 pm IST	-
⌘	4	OCDoctor-Scheduled U...	OCDoctor...	→	[Ops Cen...	01/12/2012 4:30:00 pm IST	-

To know more information about a job, double-click a job. Click the right-arrow of Job Details to view a summarized information about Job ID, Job Name, Job Type, Mode, Failure Policy, Job Owner, and so on. You can view the Target Overall Status, Last Known Progress, and the Target Name. Jobs pane lets you re-run the selected failed target. Double-click the target to view all the associated tasks for that job. It displays Task Name, Target of The Task, Result, and the Elapsed Time. The status of the task is displayed as an icon. Double-click the task to view the task properties, and the event logs. Oracle Enterprise Manager Ops Center lets you export the logs of a job or a selected task target log in text format. Click the Refresh symbol at a desired point of time to refresh the user interface.

Figure 3–12 Reviewing a Job



At any point of time, you can Stop a Selected Job, Delete a Job, Copy a Job, Answer Questions for a Job, and Debug a Job through ODoctor.

Some actions creates the job immediately but often, you must provide more information to specify the job. These actions start a wizard to guide you through creating a job. The last page of wizard displays a summary of your specifications before you submit a job.

Oracle Enterprise Manager Ops Center displays all types of jobs. You can filter the jobs in various categories and view them. You can view the Jobs In Progress, Jobs awaiting for User Input, Failed Jobs, Partially Successful Jobs, Stopped Jobs, Scheduled Jobs, and the Successful Jobs.

The other details of job includes Status, Job ID, Job Type, Job Name, Mode, Owner, Elapsed Time, and Start/Scheduled Date. Oracle Enterprise Manager Ops Center also provides a search facility for jobs on these details. The search functionality displays results according to your search criteria. You can click the Refresh icon to view the latest information for jobs.

The Jobs pane, when collapsed, displays the Status Icons, the Count for All Jobs, Jobs In Progress, Jobs Waiting For User Input, Jobs failed, Jobs Partially Successful, Jobs Stopped, Jobs Scheduled, and Jobs Successful.

Searching in Oracle Enterprise Manager Ops Center

Oracle Enterprise Manager Ops Center provides various search options, such as:

- In the global search field, in the upper-right corner of the user interface, you can search for any Network, Storage Library, or Asset.
- In the Navigation pane, you can search for the asset. It highlights the first result in the asset tree for your selection, and the Dashboard tab of the center pane displays information about the searched asset. Use the up and down arrows to view the next matching asset.
- In the Navigation pane, select All Assets and click Managed Assets tab to search all assets or filter by assets type. You can further search for an asset.
- In the Jobs pane, you can search for the jobs. Use the search function to filter the category of information you want to view.

Establishing Your Account Preferences

Oracle Enterprise Manager Ops Center enables you to customize the user interface by the preference of users.

You can select any drawer of the Navigation pane to be displayed as the default view each time you log in. You can also select a sub-option of assets to be displayed as the default view. Your personal preferences override the preferences that were set for your role.

In addition to the default view preferences, you can use the Display preferences to display any specific drawer from the Navigation pane. By default, the Assets and Administration drawers cannot be hidden. When you select Assets for display, you can also choose to display the default tab.

You can set values for Session Timeout, Console Session Timeout, Connectivity Check Interval, Table Refresh Frequency, and Job Status Popup Duration for Time Intervals.

You can also select the default display preferences for Membership Graph. You can set the display preferences for the orientation, icon size, and level of depth for the assets in Membership Graph.

Users Preferences Summary displays a summarized history of the preferences that you have selected in My Preferences. You can view your set preferences for the start page, display, time intervals, asset default tab, and Membership Graph.

Resources

To prepare to use Oracle Enterprise Manager Ops Center in your data center, see the Oracle Enterprise Manager Ops Center documentation at <http://www.oracle.com/pls/topic/lookup?ctx=oc121>.

Download the product software from the Oracle Software Delivery Cloud at <https://edelivery.oracle.com/>

